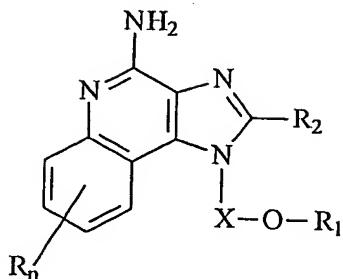


WHAT IS CLAIMED IS:

1. A compound of the formula (I):

5



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wherein: X is -CHR<sub>3</sub>-, -CHR<sub>3</sub>-alkyl-, or -CHR<sub>3</sub>-alkenyl-;

R<sub>1</sub> is selected from the group consisting of:

-alkenyl;

-aryl; and

-R<sub>4</sub>-aryl;

15

R<sub>2</sub> is selected from the group consisting of:

-hydrogen;

-alkyl;

-alkenyl;

-aryl;

-heteroaryl;

-heterocyclyl;

-alkyl-Y-alkyl;

-alkyl-Y- alkenyl;

-alkyl-Y-aryl; and

20

- alkyl or alkenyl substituted by one or more substituents selected from the group consisting of:

-OH;

-halogen;

25

-N(R<sub>3</sub>)<sub>2</sub>;  
-CO-N(R<sub>3</sub>)<sub>2</sub>;  
-CO-C<sub>1-10</sub> alkyl;  
-CO-O-C<sub>1-10</sub> alkyl;

5 -N<sub>3</sub>;

-aryl;  
-heteroaryl;  
-heterocyclyl;  
-CO-aryl; and

10 -CO-heteroaryl;

R<sub>4</sub> is alkyl or alkenyl, which may be interrupted by one or more  
-O- groups;

each R<sub>3</sub> is independently H or C<sub>1-10</sub> alkyl;

each Y is independently -O- or -S(O)<sub>0-2</sub>;

15 n is 0 to 4; and

each R present is independently selected from the group consisting of C<sub>1-10</sub> alkyl, C<sub>1-10</sub> alkoxy, hydroxy, halogen and trifluoromethyl;  
or a pharmaceutically acceptable salt thereof.

20

2. A compound or salt of claim 1 wherein R<sub>1</sub> is -alkyl-aryl.

3. A compound or salt of claim 1 wherein R<sub>1</sub> is -(CH<sub>2</sub>)<sub>0-3</sub>-phenyl.

25 4. A compound or salt of claim 1 wherein R<sub>1</sub> is -(CH<sub>2</sub>)<sub>0-3</sub>-substituted phenyl.

5. A compound or salt of claim 1 wherein X is -CH(alkyl)(alkyl)- wherein the alkyl groups can be the same or different.

30 6. A compound or salt of claim 1 wherein X is -CH<sub>2</sub>-CH<sub>2</sub>-.

7. A compound or salt of claim 1 wherein X is -CH(C<sub>2</sub>H<sub>5</sub>)(CH<sub>2</sub>)-.

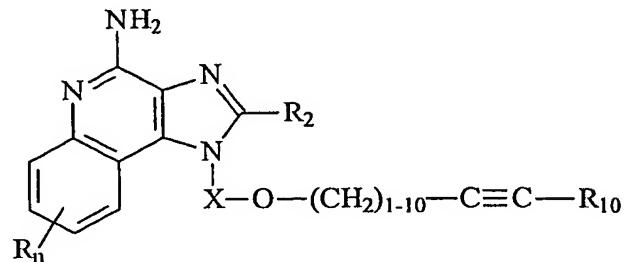
8. A compound or salt of claim 1 wherein R<sub>2</sub> is H.

9. A compound or salt of claim 1 wherein R<sub>2</sub> is alkyl.

5

10. A compound or salt of claim 1 wherein R<sub>2</sub> is -alkyl-O-alkyl.

11. A compound of the formula (II)



10

(II)

wherein X is -CHR<sub>3</sub>-, -CHR<sub>3</sub>-alkyl-, or -CHR<sub>3</sub>-alkenyl-;

R<sub>10</sub> is selected from the group consisting of:

15

- H;
- alkyl;
- alkenyl; and
- aryl;

R<sub>2</sub> is selected from the group consisting of:

20

- hydrogen;
- alkyl;
- alkenyl;
- aryl;
- heteroaryl;
- heterocycl;
- alkyl-Y-alkyl;
- alkyl-Y- alkenyl;
- alkyl-Y-aryl; and

25

-alkyl or alkenyl substituted by one or more substituents selected from the group consisting of:

-OH;  
-halogen;  
-N(R<sub>3</sub>)<sub>2</sub>;  
-CO-N(R<sub>3</sub>)<sub>2</sub>;  
-CO-C<sub>1-10</sub> alkyl;  
-CO-O-C<sub>1-10</sub> alkyl;  
-N<sub>3</sub>;  
-aryl;  
-heteroaryl;  
-heterocyclyl;  
-CO-aryl; and  
-CO-heteroaryl;

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15

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n is 0 to 4;

each Y is independently -O- or -S(O)<sub>0-2</sub>;

each R<sub>3</sub> is independently H or C<sub>1-10</sub> alkyl; and

each R present is independently selected from the group consisting of C<sub>1-10</sub> alkyl, C<sub>1-10</sub> alkoxy, hydroxy, halogen and trifluoromethyl;

or a pharmaceutically acceptable salt thereof.

12. A compound of claim 11 wherein R<sub>10</sub> is aryl.

13. A compound or salt of claim 11 wherein R<sub>10</sub> is -(CH<sub>2</sub>)<sub>0-3</sub>-phenyl.

25

14. A compound or salt of claim 11 wherein R<sub>10</sub> is -(CH<sub>2</sub>)<sub>0-3</sub>-substituted phenyl.

15. A compound or salt of claim 11 wherein X is -CH(alkyl)(alkyl)-, wherein the alkyl groups can be the same or different.

30

16. A compound or salt of claim 11 wherein X is -CH<sub>2</sub>-CH<sub>2</sub>-.

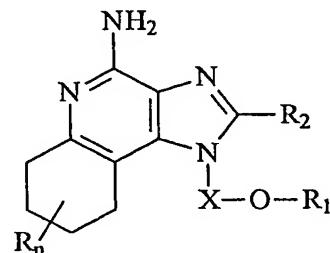
17. A compound or salt of claim 11 wherein X is  $-\text{CH}(\text{C}_2\text{H}_5)(\text{CH}_2)-$ .

18. A compound or salt of claim 11 wherein  $\text{R}_2$  is H.

5 19. A compound or salt of claim 11 wherein  $\text{R}_2$  is alkyl.

20. A compound or salt of claim 11 wherein  $\text{R}_2$  is alkyl-O-alkyl.

21. A compound of the formula (III)



10

(III)

wherein: X is  $-\text{CHR}_3-$ ,  $-\text{CHR}_3\text{-alkyl}-$ , or  $-\text{CHR}_3\text{-alkenyl}-$ ;

$\text{R}_1$  is selected from the group consisting of:

-aryl;

15 -alkenyl; and

- $\text{R}_4\text{-aryl}$ ;

$\text{R}_2$  is selected from the group consisting of:

-hydrogen;

-alkyl;

20 -alkenyl;

-aryl;

-heteroaryl;

-heterocyclyl;

-alkyl-Y-alkyl;

25 -alkyl-Y-aryl;

- alkyl-Y- alkenyl; and

25

- alkyl or alkenyl substituted by one or more substituents selected from the group consisting of:

-OH;  
-halogen;  
-N(R<sub>3</sub>)<sub>2</sub>;  
-CO-N(R<sub>3</sub>)<sub>2</sub>;  
-CO-C<sub>1-10</sub> alkyl;  
-CO-O-C<sub>1-10</sub> alkyl;  
-N<sub>3</sub>;  
-aryl;  
-heteroaryl;  
-heterocycll;  
-CO-aryl; and  
-CO-heteroaryl;

10

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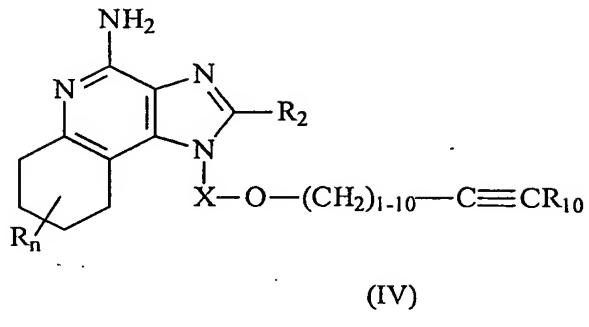
20

R<sub>4</sub> is alkyl or alkenyl, which may be interrupted by one or more

-O- groups;  
each R<sub>3</sub> is independently H or C<sub>1-10</sub> alkyl;  
each Y is independently -O- or -S(O)<sub>0-2</sub>-;  
n is 0 to 4; and  
each R present is independently selected from the group consisting of C<sub>1-10</sub> alkyl, C<sub>1-10</sub> alkoxy, hydroxy, halogen and trifluoromethyl;  
or a pharmaceutically acceptable salt thereof.

22. A compound or salt of claim 21 wherein R<sub>1</sub> is -(CH<sub>2</sub>)<sub>0-3</sub>-substituted phenyl.
- 25 23. A compound or salt of claim 21 wherein R<sub>2</sub> is H or alkyl.
24. A compound or salt of claim 21 wherein R<sub>2</sub> is -alkyl-O-alkyl.

25. A compound of the formula (IV):



5. wherein: **X** is  $-\text{CHR}_3-$ ,  $-\text{CHR}_3\text{-alkyl}-$ , or  $-\text{CHR}_3\text{-alkenyl}-$ ;

**R<sub>10</sub>** is selected from the group consisting of:

- H;
- alkyl;
- alkenyl; and
- aryl;

10

**R<sub>2</sub>** is selected from the group consisting of:

- hydrogen;
- alkyl;
- alkenyl;
- aryl;
- heteroaryl;
- heterocyclyl;
- alkyl-Y-alkyl;
- alkyl-Y-aryl;
- alkyl-Y- alkenyl; and

20

- alkyl or alkenyl substituted by one or more substituents selected from the group consisting of:

- OH;
- halogen;
- $-\text{N}(\text{R}_3)_2$ ;
- $-\text{CO}-\text{N}(\text{R}_3)_2$ ;
- $-\text{CO}-\text{C}_{1-10}\text{ alkyl}$ ;

25

-CO-O-C<sub>1-10</sub> alkyl;

-N<sub>3</sub>;

-aryl;

-heteroaryl;

5 -heterocyclyl;

-CO-aryl; and

-CO-heteroaryl;

each R<sub>3</sub> is independently H or C<sub>1-10</sub> alkyl;

each Y is independently -O- or -S(O)<sub>0-2</sub>-;

10 n is 0 to 4; and

each R present is independently selected from the group consisting of C<sub>1-10</sub>

alkyl, C<sub>1-10</sub> alkoxy, hydroxy, halogen and trifluoromethyl;

or a pharmaceutically acceptable salt thereof.

15 26. A pharmaceutical composition comprising a therapeutically effective amount of a compound or salt of claim 1 and a pharmaceutically acceptable carrier.

27. A pharmaceutical composition comprising a therapeutically effective amount of a compound or salt of claim 11 and a pharmaceutically acceptable carrier.

20 28. A pharmaceutical composition comprising a therapeutically effective amount of a compound or salt of claim 21 and a pharmaceutically acceptable carrier.

25 29. A method of inducing cytokine biosynthesis in an animal comprising administering a therapeutically effective amount of a compound or salt of claim 1 to the animal.

30. The method of claim 29 wherein the cytokine is IFN- $\alpha$ .

31. A method of inducing cytokine biosynthesis in an animal comprising administering a therapeutically effective amount of a compound or salt of claim 11 to the animal.

32. The method of claim 31 wherein the cytokine is IFN- $\alpha$ .

33. A method of treating a viral disease in an animal comprising administering a therapeutically effective amount of a compound or salt of claim 1 to the animal.

5 34. A method of treating a neoplastic disease in an animal comprising administering a therapeutically effective amount of a compound or salt of claim 1 to the animal.

35. A method of treating a viral disease in an animal comprising administering a therapeutically effective amount of a compound or salt of claim 11 to the animal.

10 36. A method of treating a neoplastic disease in an animal comprising administering a therapeutically effective amount of a compound or salt of claim 11 to the animal.

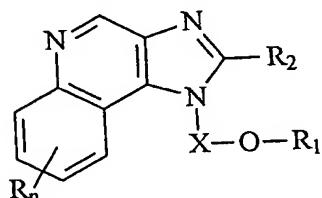
37. A method of inducing cytokine biosynthesis in an animal comprising administering a therapeutically effective amount of a compound or salt of claim 21 to the animal.

15 38. The method of claim 37 wherein the cytokine is IFN- $\alpha$ .

20 39. A method of treating a viral disease in an animal comprising administering a therapeutically effective amount of a compound or salt of claim 21 to the animal.

40. A method of treating a neoplastic disease in an animal comprising administering a therapeutically effective amount of a compound or salt of claim 21 to the animal.

25 41. A compound of the formula (V):



(V)

wherein **X** is  $-\text{CHR}_3-$ ,  $-\text{CHR}_3\text{-alkyl}-$ , or  $-\text{CHR}_3\text{-alkenyl}-$ ;

**R**<sub>1</sub> is selected from the group consisting of:

-aryl;  
-alkenyl;  
5           -**R**<sub>4</sub>-aryl; and  
           $-(\text{CH}_2)_{1-10}-\text{C}\equiv\text{C}-\text{R}_{10}$ ;

**R**<sub>2</sub> is selected from the group consisting of:

-hydrogen;  
-alkyl;  
10           -alkenyl;  
-aryl;  
-heteroaryl;  
-heterocyclyl;  
-alkyl-Y-alkyl;  
15           -alkyl-Y-alkenyl;  
-alkyl-Y-aryl; and  
- alkyl or alkenyl substituted by one or more substituents selected  
from the group consisting of:

-OH;  
20           -halogen;  
-N(**R**<sub>3</sub>)<sub>2</sub>;  
-CO-N(**R**<sub>3</sub>)<sub>2</sub>;

-CO-C<sub>1-10</sub> alkyl;

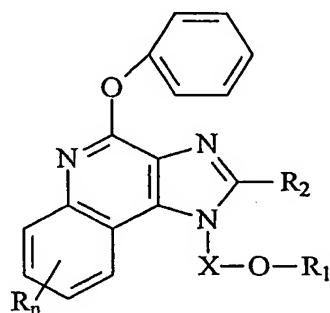
-CO-O-C<sub>1-10</sub> alkyl;

**R**<sub>4</sub> is alkyl or alkenyl, which may be interrupted by one or more

-O-- groups;

each **R**<sub>3</sub> is independently H or C<sub>1-10</sub> alkyl;  
**R**<sub>10</sub> is selected from the group consisting of H, alkyl, alkenyl and aryl;  
each **Y** is independently -O- or -S(O)<sub>0-2</sub>-;  
**n** is 0 to 4; and  
each **R** present is independently selected from the group consisting of C<sub>1-10</sub> alkyl, C<sub>1-10</sub> alkoxy, hydroxy, halogen and trifluoromethyl;  
or a pharmaceutically acceptable salt thereof.

42. A compound of the formula (VI):



(VI)

wherein  $\mathbf{X}$  is  $-\text{CHR}_3-$ ,  $-\text{CHR}_3\text{-alkyl-}$ , or  $-\text{CHR}_3\text{-alkenyl-}$ ;

15 -aryl;  
 -alkenyl;  
 -R<sub>4</sub>-aryl; and  
 -(CH<sub>2</sub>)<sub>1-10</sub>-C≡C-R<sub>10</sub>

**R<sub>2</sub>** is selected from the group consisting of:

20 -hydrogen;  
 -alkyl;  
 -alkenyl;  
 -aryl;  
 -heteroaryl;

25 -heterocyclyl;  
 -alkyl-Y-alkyl;

- alkyl-Y- alkenyl;
- alkyl-Y-aryl; and
- alkyl or alkenyl substituted by one or more substituents selected from the group consisting of:

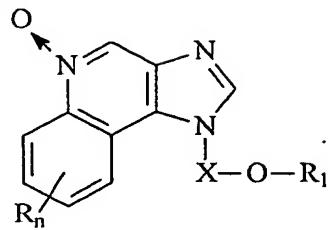
**R<sub>4</sub>** is alkyl or alkenyl, which may be interrupted by one or more

-O- groups;

each  $\mathbf{R}_3$  is independently H or  $\mathbf{C}_{1-10}$  alkyl;

20           **R<sub>10</sub>** is selected from the group consisting of H, alkyl, alkenyl and aryl;  
each **Y** is independently —O— or —S(O)<sub>0-2</sub>—;  
**n** is 0 to 4; and  
each **R** present is independently selected from the group consisting of C<sub>1-10</sub>  
alkyl, C<sub>1-10</sub> alkoxy, hydroxy, halogen and trifluoromethyl;  
25           or a pharmaceutically acceptable salt thereof.

43. A compound of the formula (VII):



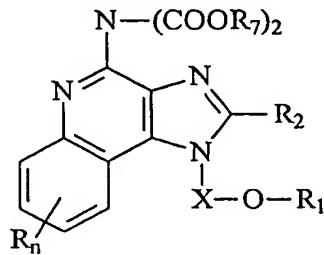
(VII)

5 wherein:  $\mathbf{X}$  is  $-\text{CHR}_3-$ ,  $-\text{CHR}_3\text{-alkyl}-$ , or  $-\text{CHR}_3\text{-alkenyl}-$ ;  
 $\mathbf{R}_1$  is selected from the group consisting of:

-aryl;  
-alkenyl;  
 $-\mathbf{R}_4\text{-aryl}$ ; and  
 $-(\text{CH}_2)_{1-10}\text{-C}\equiv\text{C-R}_{10}$ ;

10  $\mathbf{R}_4$  is alkyl or alkenyl, which may be interrupted by one or more  
 $-\text{O}-$  groups;  
each  $\mathbf{R}_3$  is independently H or  $\text{C}_{1-10}$  alkyl;  
 $\mathbf{R}_{10}$  is selected from the group consisting of H, alkyl, alkenyl and aryl;  
15  $\mathbf{n}$  is 0 to 4; and  
each  $\mathbf{R}$  present is independently selected from the group consisting of  $\text{C}_{1-10}$   
alkyl,  $\text{C}_{1-10}$  alkoxy, hydroxy, halogen and trifluoromethyl;  
or a pharmaceutically acceptable salt thereof.

20 44. A compound of the formula (VIII):



(VIII)

wherein: **X** is  $-\text{CHR}_3-$ ,  $-\text{CHR}_3\text{-alkyl}-$ , or  $-\text{CHR}_3\text{-alkenyl}-$ ;

**R<sub>1</sub>** is selected from the group consisting of:

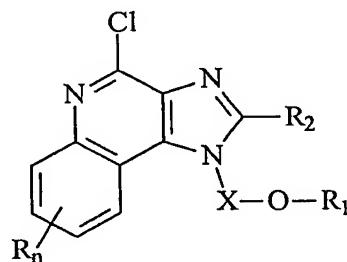
- aryl;
- 5 -alkenyl;
- R<sub>4</sub>-aryl; and
- (CH<sub>2</sub>)<sub>1-10</sub>-C≡C-R<sub>10</sub>;

**R<sub>2</sub>** is selected from the group consisting of:

- hydrogen;
- 10 -alkyl;
- alkenyl;
- aryl;
- heteroaryl;
- heterocyclyl;
- 15 -alkyl-Y-alkyl;
- alkyl-Y- alkenyl;
- alkyl-Y-aryl; and
- alkyl or alkenyl substituted by one or more substituents selected from the group consisting of:
- 20 -OH;
- halogen;
- N(R<sub>3</sub>)<sub>2</sub>;
- CO-N(R<sub>3</sub>)<sub>2</sub>;
- CO-C<sub>1-10</sub> alkyl;
- 25 -CO-O-C<sub>1-10</sub> alkyl;
- N<sub>3</sub>;
- aryl;
- heteroaryl;
- heterocyclyl;
- 30 -CO-aryl; and
- CO-heteroaryl;

**R<sub>4</sub>** is alkyl or alkenyl, which may be interrupted by one or more  
-O- groups;  
each **R<sub>3</sub>** is independently H or C<sub>1-10</sub> alkyl;  
**R<sub>10</sub>** is selected from the group consisting of H, alkyl, alkenyl and aryl;  
5 each **Y** is independently -O- or -S(O)<sub>0-2</sub>-;  
**n** is 0 to 4;  
each **R** present is independently selected from the group consisting of C<sub>1-10</sub>  
alkyl, C<sub>1-10</sub> alkoxy, hydroxy, halogen and trifluoromethyl; and  
**R<sub>7</sub>** is *tert*-butyl or benzyl;  
10 or a pharmaceutically acceptable salt thereof.

45. A compound of the formula (IX)



15 (IX)

wherein: **X** is -CHR<sub>3</sub>-, -CHR<sub>3</sub>-alkyl-, or -CHR<sub>3</sub>-alkenyl-;

**R<sub>1</sub>** is selected from the group consisting of:

-aryl;  
20 -alkenyl;  
-R<sub>4</sub>-aryl; and  
-(CH<sub>2</sub>)<sub>1-10</sub>-C≡CH;

**R<sub>2</sub>** is selected from the group consisting of:

-hydrogen;  
25 -alkyl;  
-alkenyl;  
-aryl;

-heteroaryl;  
-heterocyclyl;  
-alkyl-Y-alkyl;  
-alkyl-Y- alkenyl;  
-alkyl-Y-aryl; and  
- alkyl or alkenyl substituted by one or more substituents selected  
from the group consisting of:

-OH;  
-halogen;  
-N(R<sub>3</sub>)<sub>2</sub>;  
-CO-N(R<sub>3</sub>)<sub>2</sub>;  
-CO-C<sub>1-10</sub> alkyl;  
-CO-O-C<sub>1-10</sub> alkyl;  
-N<sub>3</sub>;  
-aryl;  
-heteroaryl;  
-heterocyclyl;  
-CO-aryl; and  
-CO-heteroaryl;

**R<sub>4</sub>** is alkyl or alkenyl, which may be interrupted by one or more  
-O- groups;  
each **R<sub>3</sub>** is independently H or C<sub>1-10</sub> alkyl;  
each Y is independently -O- or -S(O)<sub>0-2</sub>-;  
**n** is 0 to 4; and  
each R present is independently selected from the group consisting of C<sub>1-10</sub>  
alkyl, C<sub>1-10</sub> alkoxy, hydroxy, halogen and trifluoromethyl;  
or a pharmaceutically acceptable salt thereof.

30